

Chapter 1

PURPOSE AND NEED

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1.1 Introduction

The Yakima River Basin Water Storage Feasibility Study (Storage Study), as authorized by the Omnibus Appropriations Act of 2003 (Omnibus Act), Public Law (P.L.) 108-7, examines the feasibility and acceptability of storage augmentation for the benefit of fish, irrigation, and future municipal water supply for the Yakima River basin.

Storage augmentation, as defined within the Storage Study, includes two concepts:

- Diverting Columbia River water to a potential Black Rock reservoir for further water transfer to irrigation entities in the Yakima River basin as exchange supply, thereby reducing irrigation demand on Yakima River water and improving Yakima Project stored water supplies
- Creating additional water storage for the Yakima River basin to provide increased management flexibility of the existing water supply.

The Storage Study is generally confined to resources within the Yakima River basin currently served by Reclamation's Yakima Project water storage and distribution features. However, because the feasibility of importing Columbia River water for delivery to the Yakima Project water users is a major component of the Storage Study, the effects of such an action on Columbia River water and on other resources are also evaluated.

The State of Washington, represented by the Department of Ecology (Ecology), and the Bureau of Reclamation (Reclamation) are the co-leads in the Storage Study. Reclamation and Ecology have jointly prepared this Draft Planning Report/Environmental Impact Statement, Yakima River Basin Water Storage Feasibility Study (Draft PR/EIS). This document combines a planning report and an environmental impact statement that complies with both National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) requirements. The document follows the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs)* (U.S. Water Resources Council, 1983), for documenting benefits and costs of Joint Alternatives.

This Draft PR/EIS presents information developed during the Storage Study, including analyses of alternatives designed for storage augmentation and

beneficial use of water for fish, irrigation, and municipal needs as laid out in the Omnibus Act. In addition to Reclamation's authorization and focus on storage augmentation, Ecology is required to evaluate a broad range of potential actions encompassing both structural and nonstructural options both within the Yakima River basin and at locations outside the basin that may improve water availability for fish, irrigation, and municipal demands. This Draft PR/EIS provides NEPA and SEPA coverage of the Joint Alternatives and the broader range of alternatives that Ecology has considered (State Alternatives).

1.2 Purpose of and Need for Action

The purpose of the Storage Study is to evaluate plans that would create additional water storage for the Yakima River basin, and assess each plan's potential to supply the water needed for fish and the aquatic resources that support them, basinwide irrigation, and future municipal demands.

The need for the study is based on the finite existing water supply and limited storage capability of the Yakima River basin. This finite supply and limited storage capability does not meet the water supply demands in all years and results in significant adverse impacts to the Yakima River basin's economy, which is agriculture-based, and to the basin's aquatic resources—specifically those resources supporting anadromous fish. Reclamation and Ecology seek to identify means of increasing water supplies available for purposes of improving anadromous fish habitat and meeting irrigation and future municipal needs.

1.2.1 Study Authority

Benton County and the Yakima Basin Storage Alliance, a grassroots organization promoting the Black Rock Alternative, went to Congress and the State of Washington to obtain the authorizations necessary for the Storage Study to be initiated and funded from Congress.

1.2.1.1 Federal Authority

Section 214 of the Act of February 20, 2003 (Public Law 108-7), states,

The Secretary of the Interior, acting through the Bureau of Reclamation, shall conduct a feasibility study of options for additional water storage in the Yakima River Basin, Washington, with emphasis on the feasibility of storage of Columbia River water in the potential Black Rock reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply.

This Draft PR/EIS was prepared to address the technical viability of Yakima River basin storage alternatives, and the extent that additional stored water

supply provided by these alternatives would assist in meeting the Storage Study goals. Storage Study goals include:

- Improve anadromous fish habitat by restoring the flow regimes of the Yakima and Naches Rivers to more closely resemble the natural (unregulated) hydrograph. Through a collaborative process with the Storage Study Technical Work Group (SSTWG),¹ Reclamation developed nonbinding flow objectives to assist in measuring goal achievement (table 1.1).
- Improve the water supply for proratable (junior) irrigation entities by providing a not less than 70-percent irrigation water supply for irrigation districts during dry years relying on diversions subject to proration. This 70-percent goal equates to 896,000 acre-feet of proratable entitlements.
- Meet future municipal water supply needs by maintaining a full municipal water supply for existing users and providing additional surface water supply of 82,000 acre-feet for population growth to the year 2050.

Table 1.1 Monthly flow objectives (cfs) for an average water year for the Easton, Cle Elum River, Ellensburg, Wapato, and lower Naches River reaches

Reach	Spring				Summer				Winter			
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Easton	722	1,166	1,400	787	450	375	375	375	425	450	450	450
Cle Elum River	511	954	1,500	1,301	589	400	400	400	425	425	425	425
Ellensburg	1,982	2,424	3,700	2,586	2,000	1,000	1,000	1,000	980	1,016	1,257	1,459
Wapato	3,109	2,794	3,500	2,655	1,300	1,300	1,300	1,300	1,758	1,854	2,163	2,460
Lower Naches River	1,265	1,802	2,297	2,291	988	550	550	550	500	576	691	720

1.2.1.2 State Authority

Authority for the State of Washington is contained in the 2003-2005 Capitol Budget (Section 316 (1)(a) of Substitute Senate Bill 5401 as enacted June 26, 2003, Water Supply Facilities Program (04-4-006):

The appropriations in this section are subject to the following conditions and limitations:

(1)(a) \$1,000,000 of the state building construction account appropriation and \$3,000,000 of the state and local improvements

¹ A biologist work group formed to assist on technical matters related to the Yakima River basin aquatic habitat aspects.

revolving account appropriation are provided solely for expenditure under a contract between the department of ecology and the United States bureau of reclamation for the development of plans, engineering, and financing reports and other preconstruction activities associated with the development of water storage projects in the Yakima river basin, consistent with the Yakima river basin water enhancement project, P.L. 103-434. The initial water storage feasibility study shall be for the Black Rock reservoir project. The department shall seek Federal funds to augment the funding provided by this appropriation.

SEPA (Chapter 43.21C Revised Code of Washington [RCW]) is intended to ensure that environmental values are considered during decisionmaking by State and local governments. Because State and local permits, approvals, and funding would be required to implement a water supply project in the Yakima River basin, SEPA environmental review is required. Under SEPA and SEPA Rules (Chapter 197-11 Washington Administrative Code [WAC]), an EIS is intended to provide an impartial discussion of significant environmental impacts and serve to inform decisionmakers and the public of reasonable alternatives, including mitigation measures, that would minimize adverse impacts or enhance environmental quality (WAC 197-11-400).

Ecology, the SEPA lead agency, is required to identify reasonable alternatives to be evaluated in an environmental impact statement (WAC 197-11-408). Reasonable alternatives shall include actions that could feasibly attain or approximate a proposal's objectives but at a lower environmental cost or decreased level of environmental degradation (WAC 197-11-440(5)).

Ecology determined the objectives of the proposal are to provide additional water supplies for anadromous fish and irrigated agriculture as well as for future municipal growth. Consequently, for the purposes of SEPA, the alternatives were not limited to storage options or storage facilities located within the Yakima River basin. During the scoping process conducted for the Storage Study, a number of potential nonstorage alternatives were identified in public comments. Ecology has determined that a number of those potential alternatives should be analyzed to fulfill its responsibilities under SEPA.

Under SEPA, one alternative may be used as a benchmark for comparing alternatives (WAC 197-11-440(5)). Ecology is using Reclamation's study goals described above as a benchmark for evaluating the effectiveness of the State Alternatives.

1.2.2 Physical Constraints on the Water Supply

1.2.2.1 Instream Flows/Habitat

Management of the current water supply in the Yakima River basin affects anadromous and resident salmonids in the following ways:

In most years, spring flows in the middle and lower Yakima River are not sufficient to optimize smolt outmigrant survival. The inadequacy in flow is expressed in a decrease in the magnitude and frequency of peak flow events.

In most years, summer flows in the Wapato reach and immediately downstream from Prosser Diversion Dam (river mile [RM] 48) to the Chandler Powerplant (RM 36) are less than ideal for salmonid habitat and for proper riparian function (e.g., cottonwood regeneration).

Unnaturally high summer flows persist in the upper Yakima and Cle Elum Rivers that impact juvenile salmonid rearing habitat.

The annual late summer “flip-flop”² operation disrupts salmonid habitat spatially and has impacts to the aquatic insect populations.

Winter flows in upper Yakima and Cle Elum Rivers are low and controlled for water storage that potentially impacts winter survival of over-wintering juvenile salmonids.

1.2.2.2 Dry Year Irrigation

The Yakima Project’s surface water supply comes from the Yakima River and its tributaries, irrigation return flows, and releases of stored water from the five major reservoirs in the basin.³ Only 30 percent of the average annual runoff can be stored in the storage system. The Yakima Project depends heavily on the timing of spring and summer runoff from snowmelt and rainfall. The spring and early summer runoff flows supply most river basin demands through June in an average year. The majority of spring and summer runoff is from snowmelt; as a result, the snowpack is often considered a “sixth reservoir.” In most years, the five major reservoirs are operated to maximize storage in June, which typically coincides with the end of the major runoff. The reservoirs have a combined storage capacity of about 1.07 million acre-feet (maf).

Demand for water from the Yakima River cannot always be met in years with below-average runoff. Currently, Reclamation storage contracts total 1.74 maf,

² A detailed history and description of the flip-flop river operation, instituted in the early 1980s, can be found in the *Interim Comprehensive Basin Operating Plan* (Reclamation, 2002a).

³ The five major reservoirs (and their acre-foot active capacities) are: Keechelus (157,800); Kachess (239,000); Cle Elum (436,900), Bumping Lake (33,700), and Rimrock/Tieton Dam (198,000).

but the average yearly runoff passing through the storage reservoir system is only 1.71 maf. Though all of the entitlement holders do not call on their full entitlement volume every year, the existing surface water supply does not presently meet all water needs in dry years. A dry year results in prorationing during the irrigation season. Prorationing refers to the process in the Yakima River basin (discussed below) of equally reducing the amount of water delivered to junior, i.e., “proratable” water right holders in water-deficient years. In addition, reduced summer and early fall streamflows inhibit migrating, spawning, and rearing conditions for anadromous fish.

1.2.2.3 Municipal and Domestic Water Supply

Currently, only the cities of Cle Elum and Yakima obtain their municipal and domestic water from the surface waters of the Yakima River basin. Groundwater supplies the remainder of the municipal and domestic needs (83 percent) and is the preferred source by the cities for meeting future needs.

In the *Watershed Management Plan* (2003), the Yakima River Basin Watershed Planning Unit and the Tri-County Water Resources Agency noted the importance of the relationship between surface water and groundwater in managing water resources in the Yakima River basin. They indicated pumping groundwater from some aquifers at some locations may reduce flows in surface waters, affecting fish and other aquatic resources, or may impair senior water rights. (This relationship is referred to as “connectivity.”) In other cases, pumping groundwater may have little effect on surface waters, or may have effects that are delayed in time or occur at distances far from the well.

Because groundwater is the preferred source for municipal and domestic water supply, and the extent of connectivity of surface and groundwater is unknown at this time, in its analysis, the *Watershed Management Plan* took a conservative approach by assuming that surface water withdrawals would meet the future municipal and domestic water supply needs. The U.S. Geological Survey (USGS) is currently investigating the groundwater aquifers in the Yakima River basin to clarify the surface water and groundwater relationship. The study is currently in process.

1.2.3 Statutory Constraints on the Water Supply

Reclamation operates the Yakima Project to achieve specific purposes: irrigation water supply, flood control, power generation, and instream flows for fish, wildlife, and recreation. Irrigation operations and flood control management have been historical priorities for reservoir operations. The Yakima Project’s authorization and water rights, issued under Washington State water law, and the *1945 Consent Decree* (discussed later in this section) are statutory constraints for

water resources. Reclamation must operate the Yakima River divisions and storage facilities in a manner that avoids injury to water users within this framework.

Project operators use a number of control points to monitor the river system. The primary control point for operation of the upper Yakima Project is the Yakima River near the Parker stream gage. Legislation in 1994 provided that an additional purpose of the Yakima Project shall be for fish, wildlife, and recreation, but that this additional purpose “shall not impair the operation of the Yakima Project to provide water for irrigation purposes nor impact existing contracts.” Since April 1995, the Yakima Project has been operated as required by the 1994 legislation to maintain target streamflows downstream from Sunnyside Diversion Dam, as measured at the Yakima River near the Parker stream gage. These flows, based on the estimated water available, range from 300 to 600 cubic feet per second (cfs) between April 1 and October 31.

Reclamation’s *Yakima River Basin Water Enhancement Project, Washington, Final Programmatic Environmental Impact Statement* (Reclamation, 1999) presents a more complete description of statutory constraints for managing water resources in the Yakima Project.

1.3 Background – Yakima Storage Study

In 2004, as part of the Storage Study, Reclamation requested that the Washington Department of Fish and Wildlife (WDFW) identify fish and wildlife issues that the Storage Study should address. WDFW prepared a list of 45 issues.

Reclamation then asked area fish and wildlife experts to form a Biology Technical Work Group (Biology TWG), consisting of technical representatives from National Oceanic and Atmospheric Administration (NOAA) Fisheries, U.S. Fish and Wildlife Service (Service), WDFW, Ecology, the Yakama Nation, Yakima Basin Joint Board, Yakima Subbasin Fish and Wildlife Planning Board, and Reclamation’s Upper Columbia Area Office (UCAO) and Technical Service Center. The Biology TWG refined the 45-item list down to 16 significant issues to serve as the foundation for fish and wildlife analyses and an environmental impact statement. A fish or wildlife issue was considered significant if the resource response was anticipated to be: (1) measurable (i.e., either a positive or negative change from existing conditions) and (2) linked to more or less water in the Columbia or Yakima River systems resulting from implementation of an alternative of the Storage Study. The *Defining Fish and Wildlife Resource Issues for the Yakima River Basin Water Storage Feasibility Study* (Biology Technical Work Group, 2004) describes the above Storage Study activities in more detail.

In response to input received during stakeholder meetings and the Storage Study scoping meetings, Reclamation and Ecology formed a “Roundtable” group to

participate in key aspects of the Storage Study. The Roundtable included representation from key interest groups/constituencies with a stake in the Storage Study and its outcome. It was intended to operate primarily at a policy/management level, with support from technical specialists on an as-needed basis. While the Roundtable was not a formal advisory group or decisionmaking body, Reclamation and Ecology believed that it could play an important role in ensuring the completeness, effectiveness, efficiency, and acceptability of the Storage Study as the detailed phase of analysis and decisionmaking got underway. Chapter 6 provides more information on the meetings.

Reclamation initiated the Storage Study in May 2003. Funding has been provided to Reclamation for Storage Study activities under a Memorandum of Agreement for Cost Sharing entered into with the Washington State Department of Ecology on November 14, 2003, and by congressional appropriations. Initial Storage Study efforts were directed at the Black Rock Alternative to develop data comparable to the level of information existing for other potential alternatives (e.g., Bumping Lake Enlargement, Wymer Dam and Reservoir, and Keechelus-to-Kachess Pipeline).

In February 2005, Reclamation released the *Summary Report, Appraisal Assessment of the Black Rock Alternative (Black Rock Summary Report)* (Reclamation, 2004e). The *Black Rock Summary Report* includes the information from six technical reports addressing water supply, geology, groundwater, and designs and cost estimates. Reclamation based its analysis on a reconnaissance study commissioned by Benton County and partially funded by the Washington Department of Agriculture: the *Yakima Storage Enhancement Initiative—Black Rock Reservoir Study* (Benton County Sustainable Development, 2002). Benton County hired Washington Infrastructure Services to study the potential for diverting water from the Columbia River and delivering it to Yakima River basin irrigators who would be willing to exchange it for their present (entire or partial) diversions from the Yakima River. As a result of analyses prepared for the *Black Rock Summary Report*, a water reservation was requested from the State of Washington for the Black Rock Alternative. This request informed the State that Reclamation was working on a project that would require water from the Columbia River and, if the project proved feasible, was authorized for construction, and required a water right, would preserve the date of December 29, 2004, for the water right.

In addition to the *Black Rock Summary Report*, Reclamation prepared a report on Yakima River basin water storage alternatives, the *Yakima River Basin Storage Alternatives Appraisal Assessment (Yakima Appraisal Assessment)* (Reclamation, 2006b). This report displayed the extent a Bumping Lake Enlargement, a Wymer Dam and Reservoir, and a Keechelus-to-Kachess Pipeline Alternative would satisfy the goals of the Storage Study. The alternatives were investigated, and only the Wymer Dam and Reservoir Alternative was selected to be carried forward to the feasibility phase of the Storage Study.

Since the issuance of the *Yakima Appraisal Assessment*, Reclamation has been gathering and analyzing data and information to determine the effects and benefits of Storage Study alternatives. The benefits may come from protecting threatened and endangered steelhead, enhancing other fishery conditions, providing more recreation opportunities, power production, mitigating the impacts of droughts on Yakima River basin agriculture, and providing a firm future municipal water supply. Analysis of effects included an investigation of seepage toward the Hanford Nuclear Reservation (Hanford Site). See *Modeling Groundwater Hydrologic Impacts of the Potential Black Rock Reservoir* (Reclamation, 2007d).

The *Storage Study Team Technical Information and Hydrologic Analysis for Plan Formulation* (Reclamation, 2006c) displayed the alternatives that would be carried forward into the PR/EIS phase of analysis. These alternatives were the Black Rock Alternative, the Wymer Dam and Reservoir Alternative, and another alternative, the Wymer Dam Plus Yakima River Pump Exchange Alternative. The last alternative was developed at the request of State and local entities to determine the effectiveness of pumping water from the mouth of the Yakima River rather than divert at the current locations for the Roza and Sunnyside Irrigation Divisions. The plan formulation document also displayed a preliminary benefit-cost analysis. The analysis did not portray a positive benefit-cost ratio, but there were other positive parameters of the alternatives, so they were carried forward into the PR/EIS phase of analysis.

1.4 Related Permits, Actions, and Laws

To implement any alternative, Reclamation would need to apply for and receive various permits, take certain actions, and conform to various laws, regulations, and Executive orders. The following major permits, actions, and laws may apply to each alternative:

- National Environmental Policy Act
- Endangered Species Act
- Secretary's Native American Trust Responsibilities
- National Historic Preservation Act
- Executive Order 11988: Floodplain Management
- Executive Order 11990: Protection of Wetlands
- Executive Order 12898: Environmental Justice
- Executive Order 13007: Indian Sacred Sites
- Section 401 Permit, Clean Water Act
- Section 402 Permit, Clean Water Act

- Section 404 Permit, Clean Water Act
- State Environmental Policy Act
- Washington Department of Natural Resources Permit
- Additional Points of Diversion Authorization
- State Trust Water Rights Program Participation
- Water use permit/certificate of water right
- Reservoir permit/aquifer storage and recovery
- Dam safety permit
- National Pollutant Discharge Elimination System permit(s)
- Section 401 water quality certification
- Shoreline conditional use permit or variance
- Water system plan approval
- Hydraulic project approval
- Critical areas permit or approval
- Floodplain development permit
- Shoreline substantial development permit, conditional use permit, or variance

1.5 Public Involvement

Formulating water storage alternatives that are responsive to the needs and desires of the American public requires planning expertise and direct public participation. Several agencies, entities, organizations, and groups participated in the Storage Study. The degree of participation ranged from providing viewpoints and general observations to direct contributions in plan formulation. Chapter 6 summarizes public outreach efforts and public input.

1.6 Yakima River Basin Background and History

1.6.1 Location and Setting

The Yakima River basin is located in south-central Washington, bounded on the west by the Cascade Range, on the north by the Wenatchee Mountains, on the east by the Columbia River drainage, on the south by the Horse Heaven Hills. The Yakima River originates in the Cascade Mountains near Snoqualmie Pass and flows southeasterly for about 215 miles to its confluence with the Columbia River near Richland, Washington. The Yakima River basin encompasses about

6,155 square miles, and includes portions of Kittitas, Yakima, Benton, and Klickitat Counties. (See the frontispiece map.)

The basin varies considerably from the higher mountain altitudes (elevation 8,184 feet in the Cascades) to the semiarid lower Yakima Valley (elevation 340 feet at the Yakima River confluence with the Columbia River). The western and northern mountains annually receive about 140 inches of precipitation. The lower valley often receives less than 10 inches of precipitation per year. The higher elevation areas in the northern and western areas are mostly forested and used for timber harvest, cattle grazing, fish and wildlife habitat, and recreation. About one-fourth of this area is designated as wilderness. The middle elevations are primarily used for dry-land and irrigated agriculture, cattle grazing, wildlife, and military training. The lower elevations in the eastern and southern portions of the basin, including the study area, are primarily used for irrigated agriculture. Agriculture is the main economy of the basin.

The Yakima River and its tributaries are the primary sources for surface water in the basin. Major tributaries include the Kachess, Cle Elum, Teanaway, and Naches Rivers. The Naches River, which joins the Yakima River at the city of Yakima, has several tributaries, including the American, Bumping, and Tieton Rivers. The Yakima River and its tributaries historically provided spawning and rearing habitat for anadromous fish. Natural streamflow conditions prevail only in the upper uncontrolled reaches of the Yakima River system because of storage development and use of water for irrigation.

Portions of some of the potential alternatives would be constructed on, or may affect, properties outside the current footprint of the Yakima Project. One of these properties is the Yakima Training Center (YTC) owned and managed by the U.S. Department of the Army primarily as a tank, artillery, and infantry gunnery range. YTC is located northeast of the city of Yakima and is bounded on the west (approximately) by Interstate 82, on the north by Interstate 90, on the east by the Columbia River, and on the south by private lands north of State Route- (SR) 24. YTC encompasses more than 500 square miles (about 323,000 acres) of arid lands.

YTC supports one of the largest contiguous blocks of shrub-steppe vegetation remaining in Washington and one of three remaining greater sage-grouse populations in the State.

Other areas that could be affected by potential alternatives include certain sections of the Columbia River and adjacent lands. These sections include the Priest Rapids Dam and Lake, the river immediately downstream known as the Hanford reach of the Columbia River, and portions of the Hanford Site. The area is located in the center of Washington where the Columbia River forms partial boundaries for Franklin, Grant, Benton, Yakima, and Kittitas Counties. This area is east of the Cascade Mountain Range in a generally semiarid region, along the

western edge of a vast basalt plateau that dominates the landscape of central Washington. Historic glaciation carved numerous canyons—known as coulees—in the area. Many of the coulees are dry. In Grant County, the heaviest precipitation usually falls between November and March and the driest period occurs from July through September. Native vegetation is sparse and restricted to low-lying shrubs and grasses known as shrub-steppe. The average maximum temperature (87 degrees Fahrenheit [°F]) occurs during July, and the coldest temperatures (average maximum of 33° to 35 °F) occur in December and January.

Priest Rapids Dam is owned and operated by Grant County Public Utility District (PUD), which also owns and operates Wanapum Dam. Priest Rapids Dam is a hydroelectric facility located on the Columbia River at RM 397. The dam is located about 24 miles south of Vantage, Washington, and about 47 miles northeast of Richland, Washington, between YTC and the Hanford Site. The dam was completed in 1961. Priest Rapids Lake extends upstream 18 miles to the Wanapum Dam.

The Hanford Site was established in 1943 during World War II as part of the Manhattan Project to provide the plutonium needed for nuclear weapons. Historically, the Hanford Site included some lands in Grant and Franklin Counties on the east side of the Columbia River, with the majority of the 586-square-mile site in Benton County, in south-central Washington. Portions of the original Hanford Site have been put to other uses over the years as the need for new nuclear weapons diminishes. For example, the Fitzner/Eberhardt Arid Lands Ecology Reserve was established in 1967. The unit occupies about 120 square miles (77,000 acres) southwest of the Columbia River and SR-240, between SRs-24 and 225. The unit contains Rattlesnake Mountain and portions of the Rattlesnake Hills. In 1971, the unit was designated a Research Natural Area, and in 1975 became part of the Department of Energy's National Environmental Research Parks system. The Saddle Mountain Unit (about 50 square miles or 32,000 acres) of the Saddle Mountain National Wildlife Refuge (NWR)—located in the northwest corner of the original Hanford Site in Grant County—came under management of the U.S. Fish and Wildlife Service in 1971. The Wahluke Unit (about 89 square miles or 57,000 acres) is located adjacent to and northeast of the Saddle Mountain Unit. This unit was managed by the Washington Department of Fish and Wildlife from 1971 to 1999, and then became part of the Saddle Mountain NWR. The Arid Lands Ecology Reserve, Saddle Mountain Unit and Wahluke Unit, plus the McGee Ranch-Riverlands Unit (about 14 square miles or 9,100 acres), the Hanford reach and other smaller land parcels became part of the 305-square-mile (195,000 acres) Hanford Reach National Monument in 2000. Portions of the remaining historic core area of the Hanford Site are undergoing cleanup under the U.S. Environmental Protection Agency's (EPA) Superfund program.

The Hanford reach of the Columbia River includes the river and shoreline lands from Priest Rapids Dam downstream 51 miles to near Richland, Washington. The

reach is free-flowing and supports a diverse mix of backwaters, islands, and other features used by area fish and wildlife. For example, the reach supports the largest spawning population (an estimated 80-90 percent) of fall Chinook salmon using the mainstem Columbia River. In addition, two federally threatened or endangered salmonid populations—Upper Columbia River steelhead and Upper Columbia River spring Chinook—migrate through the reach. Other important fish species and/or salmon runs using the reach include coho, sockeye, summer Chinook, and white sturgeon. The Hanford reach qualified for, and was proposed for, protection under Wild and Scenic River legislation in the mid-1990s; however, no action occurred until the reach became part of the Hanford Reach National Monument by Executive order in 2000.

1.6.2 Yakima Project Description

The Yakima Project is composed of seven divisions: six irrigation divisions (Kittitas, Roza, Tieton, Wapato, Sunnyside, and Kennewick), and a storage division. The six irrigation divisions provide water to about 465,400 irrigated acres of the Yakima Project and represent about 70 percent of the total diversions of major entities in the Yakima River basin. The remaining 30 percent are made up of other irrigation entities which are mainly senior water right holders. The Storage Division is comprised of the five major reservoirs with a total capacity of about 1,065,400 acre-feet. A sixth reservoir, Clear Lake, has a capacity of 5,300 acre-feet and is used primarily for recreational purposes.

The five major reservoirs—Bumping, Kachess, Keechelus, Rimrock (Tieton Dam), and Cle Elum Lakes—store and release water to meet irrigation demands, flood control needs, and instream flow requirements. Other project features include 5 diversion dams, 420 miles of canals, 1,697 miles of laterals, 30 pumping plants, 144 miles of drains, 2 federally owned powerplants, plus fish passage and protection facilities constructed throughout the project (Reclamation, 2002a). In addition to providing water for irrigation, the Yakima Project also provides hydroelectric power generation, flood control, fish and wildlife benefits, and recreation.

The Kittitas, Roza, Tieton, and Kennewick Divisions each contain a single irrigation district that is responsible for the operation and maintenance of the facilities within its division. The Wapato Division is located within the exterior boundary of the Yakama Nation Reservation and is operated by the Bureau of Indian Affairs (BIA) in consultation with the Yakama Nation and the Wapato Irrigation District. The Sunnyside Division contains four irrigation districts in addition to two ditch companies and three cities. The Sunnyside Division Board of Control has responsibility for operating and maintaining the joint facilities of the Sunnyside Division (primarily the Sunnyside Main Canal), with Sunnyside Valley Irrigation District operating these facilities on behalf of the Board of Control.

Reclamation operates the six dams and reservoirs of the storage division as well as the Roza Powerplant (part of the Roza Division) and the Chandler Pumping and Generating Plant (part of the Kennewick Division). The five major reservoirs are operated as a pooled system with no reservoir or storage space designated for a specific area, division, or entity. Stored water that is not used is carried over to the next year to the benefit of all water users.

Table 1.2 provides information on the six irrigation divisions and the physical source of the stored water supply.

The following sections provide background information of the Yakima River basin and an overview of several important studies and activities related to water management that have transpired or are ongoing within the basin.

Table 1.2 Yakima Project irrigation divisions and stored water source

Division	Location (subarea)	Diversion river mile	Stored water source	Operating entity
Kittitas	Upper Yakima	Yakima River RM 202.5	Keechelus and Kachess Lakes	Kittitas Reclamation District
Roza	Middle Yakima	Yakima River RM 127.9	Keechelus, Kachess, and Cle Elum Lake	Roza Irrigation District
Tieton	Naches	Naches River RM 14.2	Rimrock Lake	Yakima-Tieton Irrigation District
Wapato	Middle Yakima	Yakima River RM 106.7	All reservoirs	BIA and Wapato Irrigation District
Sunnyside	Middle Yakima	Yakima River RM 103.8	All reservoirs	Sunnyside Division Board of Control
Kennewick	Lower Yakima	Yakima River RM 47.1	Unregulated and return flows	Kennewick Irrigation District

1.6.3 History of Water Management in the Yakima River Basin

Development of irrigation in the Yakima River basin began as early as the 1850s. By 1902, there were an estimated 122,000 irrigated acres served by natural flows in the rivers and tributaries. However, even at that time, the natural flow was inadequate to assure a dependable water supply. A petition dated January 28, 1903, from citizens of Yakima County to the Secretary of the Interior requested United States involvement in irrigation. Further irrigation development was not possible unless two things occurred—first, existing water users had to agree to limit their water use during the low flow periods of late summer and early fall; and second, water storage was necessary to capture early season runoff for supplying irrigation water throughout the growing season.

The limitation on water use was accomplished by “limiting agreements” with more than 50 appropriators on the Yakima and Naches Rivers.⁴ The development of storage was made possible by the Washington Legislature in March 4, 1905, by granting to the United States the right to exercise eminent domain in acquiring lands, water and property for reservoirs, and other irrigation works. Under this law, a withdrawal of the unappropriated waters of the Yakima River and its principal tributaries was filed by the United States on May 10, 1905. These actions led to the authorization of the Yakima Project on December 12, 1905.

1.6.3.1 Water Appropriation From the Yakima River

May 10, 1905, Withdrawal

Using the provisions of Chapter 90.40 RCW, the Secretary of the Interior withdrew all the unappropriated waters of the Yakima River and tributaries for benefit of the proposed Yakima Reclamation Project. The withdrawal was effective from its May 10, 1905, initiation to its December 31, 1951, expiration. In that span of 45 years, water rights were established under Washington law for the developed project facilities.

1945 Consent Decree

Disputes over the use of water from the Yakima River during years of low runoff resulted in litigation in the Federal court. In 1945, the District Court of Eastern Washington issued a decree under Civil Action No. 21 called the *1945 Consent Decree*. The *1945 Consent Decree* is a legal document pertaining to water distribution and water rights in the basin. It established the rules under which Reclamation should operate the Yakima Project system to meet the water needs of the irrigation districts that predated the Yakima Project, as well as the rights of divisions formed in association with the Yakima Project.

The *1945 Consent Decree* determined water delivery entitlements for all major irrigation systems in the Yakima River basin, except for lower reaches of the Yakima River near the confluence with the Columbia River. The *1945 Consent Decree* states the quantities of water to which all water users are entitled (maximum monthly and annual diversion limits) and defines a method of prioritization to be placed in effect during water-deficient years. The water entitlements are divided into two classes—nonproratable and proratable. Nonproratable entitlements are generally held by pre-project water users, and these entitlements are to be served first from the total water supply available (TWSA). The *1945 Consent Decree* also spelled out the concept of TWSA, which is defined as, “That amount of water available in any year from natural flow of the Yakima River, and its tributaries, from storage in the various Government reservoirs on the Yakima watershed and from other sources, to

⁴ Not all appropriators signed “limiting agreements” and some appropriators’ water claims were modified as “heretofore recognized rights.”

supply the contract obligations of the United States to the Yakima River and its tributaries, heretofore recognized by the United States.” The TWSA estimate has an important role in determining operations of the Yakima Project and is estimated using forecasted runoff, forecasted return flows, and storage contents. Additional discussion of the TWSA concept can be found in chapter 4, section 4.2.

All other Yakima Project water rights are proratable, which means they are of equal priority. Any shortages that may occur are shared equally by the proratable water users.

The Federal projects within the basin were basically constructed to manage water supplies to serve the proratable water users in the basin. The contractors for this water supply repay the Yakima Project storage construction costs and the annual operation and maintenance costs allocated to the irrigation purpose. However, nonproratable entitlements are met first from the TWSA which includes stored water.

Water Right Adjudication

The *1945 Consent Decree* (described above) controlled distribution of Yakima Project water in the Yakima River basin between 1945 and 1977. In the spring of 1977, with a drought imminent, Reclamation predicted the proratable water users would receive only 15 percent of their normal water supply. Some proratable water users brought action in the U.S. District Court for the Eastern District of Washington to modify the *1945 Consent Decree* and make all right holders proratable. The Yakama Nation sought to intervene and also filed a separate action in U.S. District Court to have its treaty-reserved water rights determined. In light of this dilemma, United States District Judge Marshall Neill suggested a State court general adjudication in order to finally determine water rights in the Yakima River basin.

On October 12, 1977, the State of Washington Department of Ecology filed an adjudication of the Yakima River system in the Superior Court of Yakima County naming the United States and all persons claiming the right to use the surface waters of the Yakima River system as defendants. The purpose of this adjudication was to determine all existing surface water rights within the basin, and to correlate each right in terms of priority with all other rights. At about the same time, the Yakama Nation filed an action in U.S. District Court to determine the priority and water rights of the Yakama Nation under the treaty of 1855. The Federal case was remanded to the State case, and the filing by the Yakama Nation did not proceed.

An order of the Superior Court was entered on July 17, 1990, regarding the rights of the Yakama Nation. This Partial Summary Judgment defined the treaty-reserved rights of the Yakama Nation and the rights to flow in the mainstem

Yakima River were unanimously affirmed by the Washington Supreme Court on appeal. The treaty rights were divided into separate rights for fish and agriculture.

The Court determined that various acts of Congress, agencies, and decisions of various tribunals had defined and limited the treaty irrigation of the Yakama Nation. This right translated into existing nonproratable irrigation rights with 1855 priority, and proratable irrigation rights with a priority date of 1905.

The treaty right for fish had likewise been limited by various acts of Congress and agency actions, and had been compensated in the proceeding before the Indian Claims Commission (ICC), Docket No. 147. The flow right was held to be the “specific minimum instream flow necessary to maintain anadromous fish life in the river, according to the annual prevailing conditions as they occur and determined by the Yakima Field Office Manager in consultation with the Yakima River Basin System Operations Advisory Committee, Irrigation Districts and Company managers and others.” This decision was later extended to include all tributaries that support fish at the Yakama Nation’s usual and accustomed fishing locations. The priority date for the treaty fishing right is “time immemorial.”

The relationship of the *1945 Consent Decree* to the State’s adjudication proceeding was an issue addressed by the Superior Court in 1993 (Memorandum Opinion Re: Threshold Issues). The Court held that the *1945 Consent Decree*, in and of itself standing alone, did not establish any water rights. However, it did “memorialize the appropriations thereto made” (pre-1945). Water right claimants had the burden of addressing changes in the appropriations after 1945. The Court further stated, “Once this case is concluded . . . the final judgment herein would supersede that (1945) Decree.”

The Superior Court has issued most of the Conditional Final Orders (CFO) which confirm the surface water rights for the Yakima River basin. The Court is proceeding to prepare the *Final Decree*, which may be issued as early as 2008. The United States has been issued its CFO, including the water rights for the Yakima Project. These are the surface water rights upon which the exchange will be based.

February 17, 1981, Withdrawal

In a February 13, 1981, letter to the Washington Department of Ecology, referenced *Withdrawal of Waters for Yakima River Basin Water Enhancement Study*, Reclamation filed notice that it “. . . intends to make examinations and surveys for the utilization of the unappropriated waters of the Yakima River and its tributaries for multipurpose use under the Federal Reclamation laws.”

Reclamation certified on January 16, 1982, that the project was feasible and that investigations would be made in detail. Pursuant to RCW 90.40.030, this certification of feasibility continued the withdrawal until January 18, 1985. Reclamation has continuously renewed this withdrawal and it remains active.

The current withdrawal of Yakima River basin unappropriated surface water is for benefit of the Yakima River Basin Water Enhancement Program (YRBWEP) program. While the current YRBWEP Act does not authorize new storage reservoirs, it does authorize investigations into storage as a way to augment project supply.⁵ To build additional storage, Reclamation will require Federal authorization, either through a “Phase III” YRBWEP Act, or through another congressional authorization.

1.7 Prior Investigations and Activities in the Yakima River Basin

Since completion of the Yakima Project’s last storage facility (Cle Elum Dam and Lake in 1933), there have been numerous investigations and activities addressing the need for additional storage to meet water supply deficiencies. The current water resources infrastructure of the Yakima River basin has not been capable of consistently meeting aquatic resource demands for fish and wildlife habitat, dry year irrigation demands, and municipal water supply demands.

This section highlights the more recent prior investigations and activities to develop additional water supplies in the Yakima River basin, beginning with the 1966 *Bumping Lake Enlargement Joint Feasibility Report* (Reclamation and Service, 1966).

1.7.1 Bumping Lake Enlargement

The *Bumping Lake Enlargement Joint Feasibility Report* was prepared in 1966 by Reclamation and the U.S. Fish and Wildlife Service. The purpose of this feasibility study, authorized by the Act of September 7, 1966 (P.L. 89-56) and the Fish and Wildlife Coordination Act (FWCA), was to address the water-related problems and needs of the Yakima River basin. A preliminary feasibility report was completed in March 1968 on construction of a new dam about 1 mile downstream from the existing Bumping Lake Dam on the Bumping River, a tributary in the Naches River drainage.⁶ The report was forwarded to the Secretary of the Interior for consideration. During this process, recreation development in the recommended plan became a concern as to its compatibility with the Cougar Mountain (William O. Douglas) Wilderness Area then under consideration. It was determined that the recommended plan should be reevaluated and modified.

⁵ Title XII of the Act of October 31, 1994 (Public Law 103-434), authorized the *Basin Conservation Plan* and other measures. This Act is commonly referred to as Phase II of YRBWEP.

⁶ The capacity of the enlarged Bumping Lake was about 458,000 acre-feet, including the existing 33,700 acre-feet of the existing reservoir, which would be inundated.

Following appropriations for the reevaluation work in 1974, the revised feasibility report was resubmitted to the Commissioner of Reclamation and the Director, U.S. Fish and Wildlife Service, in 1976. It was approved by the Secretary of the Interior in 1979. Reclamation filed the *Proposed Bumping Lake Enlargement, Final Environmental Impact Statement* with the Council of Environmental Quality August 23, 1979 (Reclamation, 1979). Bills were introduced in Congress in 1979, 1981, and 1985, to authorize construction of the Bumping Lake enlargement, but Congress did not take action.

1.7.2 Yakima River Basin Water Enhancement Project

The 1977 drought in the Yakima River basin prompted legislative action for additional water supply. In 1979, the Washington Legislature provided \$500,000 for “. . . preparation of feasibility studies related to a comprehensive water supply project designed to alleviate water shortage in the Yakima River basin.” Also in 1979, Congress authorized, provided funds for, and directed the Department of the Interior to “. . . conduct a feasibility study of the Yakima River Basin Water Enhancement Project in cooperation with the State” (Act of December 28, 1979, Public Law 96-162).

The Yakima River Basin Water Enhancement Project included study activities both off and on the Yakama Nation Reservation. Some 35 potential storage sites off the Yakama Reservation were identified and evaluated. Two sites, Bumping Lake enlargement and Wymer dam and reservoir, emerged as the preferable storage sites.⁷ Four alternative plans, including “core measures,” reservoir storage, and establishment of a “Trust Fund” for implementation of nonstorage elements, were developed.⁸ Three areas for potential new on-reservation irrigation development, including storage, were identified (Satus Creek, Toppenish-Simcoe Creeks, and Ahtanum Creek), and preliminary plans prepared for these potential developments.

As planning was underway for YRBWEP, some early implementation actions were identified. These actions resulted in a cooperative Federal, State, Tribal, and local undertaking to construct “state-of-the-art” fish ladders and fish screens at water diversion points throughout the Yakima River basin. This is commonly referred to as Phase I of the YRBWEP and was initiated in the early 1980s. Fish ladders and fish screens have been completed at diversions on the Yakima and Naches Rivers and at tributary diversions.

⁷ The Wymer Dam and Reservoir Alternative is an off-channel site adjacent to the Yakima River, about 6 miles upstream of Roza Diversion Dam.

⁸ Bumping Lake enlargement capacities considered were 250,000, 400,000, and 450,000 acre-feet (including the existing 33,700-acre-foot capacity); Wymer reservoir capacity was about 142,000 acre-feet.

In 1987 and 1988, considerable effort was made by the Washington congressional delegation to structure a comprehensive solution to the water needs of the Yakima River basin in lieu of continuing with the adjudication. The impetus for this effort was the desire to reach a mutual water right settlement by means of Federal-State comprehensive legislation providing for further development of water resource facilities and stipulating the Yakima River basin's surface water rights among the parties. However, in the fall of 1988, this effort was abandoned with the decision of some of the off-reservation irrigators to pursue the adjudication process rather than a stipulated settlement.

Subsequently, in the spring of 1990, there was renewed interest in proceeding with legislation authorizing nonstorage elements. As a result, Title XII of the Act of October 31, 1994, Public Law 103-434 (commonly referred to as Phase II of the YRBWEP) was enacted. The actions that evolved from Title XII are discussed below.

1.7.2.1 Yakima River Basin Water Conservation Program

The Yakima River Basin Water Conservation Program (the centerpiece of the Title XII legislation), is a voluntary program structured to provide economic incentives with cooperative Federal, State, and local funding to stimulate the identification and implementation of structural and nonstructural water conservation measures in the Yakima River basin. Improvements in the efficiency of water delivery and use will result in improved, reach-specific streamflows for aquatic resources and improve the reliability of water supplies for irrigation.

The *Basin Conservation Plan*, prepared by the Yakima River Basin Conservation Advisory Group (1998) which was chartered under the Federal Advisory Committee Act and appointed by the Secretary of the Interior, was submitted to the Secretary of the Interior in 1998, and published and distributed in October 1999. The *Basin Conservation Plan* sets forth the mechanism for implementing water conservation measures, including eligibility requirements for Federal- and State-sponsored grants, standards for the scope and content of water conservation plans, criteria for evaluating and prioritizing conservation measures for implementation, and administrative procedures.

1.7.2.2 Yakima River Basin Water Enhancement Project, Washington, Final Programmatic Environmental Impact Statement

In January 1999, Reclamation prepared the *Yakima River Basin Water Enhancement Project, Washington, Final Programmatic Environmental Impact Statement* (Reclamation, 1999). A Record of Decision was signed in 1999. As specific actions authorized by Title XII are pursued, NEPA compliance will be developed as appropriate and to a great extent will be "tiered" off this EIS.

1.7.2.3 Report on Biologically Based Flows

The System Operation Advisory Committee (SOAC) consists of Yakima River basin biologists representing Federal, State, Tribal, and irrigation agencies and entities. SOAC provides information, advice, and assistance to Reclamation on aquatic-related issues concerning operation of the Yakima Project. Pursuant to Title XII, SOAC was directed to assess the target flows included therein “for the purpose of making a report with recommendations to the Secretary and the Congress evaluating what is necessary to have biologically based flows.” This report was provided to the Secretary of the Interior in May 1999.

The purpose of the SOAC report was to review the factors affecting anadromous fish resources in the Yakima River basin and to recommend processes and procedures required to determine biologically-based flows for increasing the abundance of salmon and steelhead. SOAC suggested that river management should embrace the concept of a normative flow regime and that effects of flow management could be evaluated with such indicators as anadromous fish early life stage survival, smolt production, and habitat quality indices.⁹ SOAC provided nine recommendations as a part of a comprehensive program designed to recover the aquatic ecosystem and the anadromous salmonid populations which depend on it.

1.7.2.4 The Reaches Project: Ecological and Geomorphic Studies Supporting Normative Flows in the Yakima River Basin

One of the items recommended in the SOAC report was to describe the health of the Yakima River basin aquatic ecosystem through a comprehensive review and synthesis of available data on Yakima River flow management, water quality, habitat condition, land use activities, and biological communities. The purpose of this activity was to identify areas in the watershed where changes in water management or Yakima Project operations offer the greatest potential to recover the aquatic ecosystem. This activity was undertaken by Jack Stanford et al. of the University of Montana’s Flathead Lake Biological Station in conjunction with Reclamation and the Yakama Nation. It is reported on in the October 2, 2002, document, *The Reaches Project: Ecological and Geomorphic Studies Supporting Normative Flows in the Yakima River Basin, Washington* (Stanford et al., 2002).

The report concludes that the distribution and concentration of algae, macro-invertebrates, and fish on the five major floodplain reaches of the Yakima River basin system clearly demonstrate the importance of off-channel habitat and indicates these floodplains have significant potential for restoration. It also suggests the Yakima River system can be restored to a normative condition and that the floodplain reaches retain some ecological integrity, but are substantially

⁹ SOAC defined a normative flow regime as one that represents historic flow conditions to the greatest extent possible given the cultural, legal, and operational constraints associated with river basin development.

degraded and cannot sustain enhanced runs of salmon and steelhead without restoring more normative flows throughout the mainstem Yakima and Naches Rivers.

1.7.2.5 *Interim Comprehensive Basin Operating Plan for the Yakima Project*

The *Interim Comprehensive Basin Operating Plan for the Yakima Project (IOP)* was completed by Reclamation in 2002. The preparation of the *IOP* was mandated by Title XII to provide a general framework within which the Yakima Project is operated. The *IOP* presents a historical context of the Yakima Project and its current operation. It describes the Yakima Project's legal and institutional aspects, articulates the impacts of Yakima Project operation on the natural resources of the basin, analyzes various operational alternatives, and recommends strategies and operational changes that will address the goals of Title XII.

1.7.3 Yakima River Watershed Council

The Yakima River Watershed Council (Watershed Council) was formed in March 1994 as a nonprofit organization. Its membership included more than 800 individuals representing water-based interests in the Yakima River basin. A primary objective of the Watershed Council was to develop strategies and a plan(s) that could be implemented to provide consistent and adequate water to meet the economic, cultural, and natural environmental needs in the Yakima River basin.

The first activity of the Watershed Council toward developing a plan was to issue a report in July 1996, called the *State of the Water Resources of the Yakima River Basin*. This was an assessment of problems and needs from the perspective of water supply, water quality, and water management.

Following development of planning goals, the Watershed Council (1997) prepared the draft plan, *A 20/20 Vision for a Viable Future of the Water Resource of the Yakima River Basin*. A review and comment period followed, and the Water Council issued a revised plan dated June 9, 1998. This included a critique of the storage sites considered in the YRBWEP investigations.

During this same timeframe, the Tri-County Water Resources Agency was formed (1995), the Washington Legislature enacted the State of Washington Watershed Management Act (1997), and the Tri-County Water Resources Agency subsequently received a Washington State planning grant for Yakima River basin watershed planning. Due to these actions, the Watershed Council terminated its activities in July 1998, and did not finalize the draft report.

1.7.4 Watershed Assessment and Watershed Management Plan

The Yakima River Basin Watershed Planning Unit was formed in 1998 for the purpose of developing a comprehensive watershed management plan for the Yakima River basin. The Yakima River Basin Watershed Planning Unit represented local governments, citizens and landowners, irrigation districts, conservation districts, State agencies, and others. With the assistance of the Tri-County Water Resources Agency (currently known as the Yakima Basin Water Resources Agency), a *Watershed Assessment, Yakima River Basin* (2001) and *Watershed Management Plan, Yakima River Basin* (2003) were completed. The *Watershed Management Plan* covers the entire Yakima River basin with the exception of the Yakama Nation Reservation.

The *Watershed Management Plan* provides a “road map” for maintaining and improving the Yakima River basin’s economic base, planning responsibility for expected growth in population, managing water resources for the long-term, and protecting the basin’s natural resources and fish runs. Seven goals for a balanced management of water resources were addressed. The following four goals are directly related to the management of surface water:

- Improve the reliability of surface water supply for irrigation use
- Provide for growth in municipal, rural, domestic, and industrial demand
- Improve instream flows for all uses with emphasis on improving fish habitat
- Maintain economic prosperity by providing an adequate water supply for all uses.

Extensive work was done with respect to water resource needs and supplies. Alternatives for improving water supplies for aquatic resources and future municipal needs and to meet dry year irrigation deficiencies were identified and evaluated.

1.7.5 Yakima Subbasin Plan

The Yakima Subbasin Fish and Wildlife Planning Board (currently renamed the Yakima Basin Fish and Wildlife Recovery Board [<http://www.YBFWRB.org>]) completed a draft *Yakima Subbasin Plan* in May 2004 as a part of the Northwest Power Planning and Conservation Council’s (NPPC) process to guide the selection of projects funded by the Bonneville Power Administration (BPA) for the protection, restoration, and enhancement of fish and wildlife affected by the Federal hydropower system. Further clarification of the draft *Yakima Subbasin Plan* was requested by NPPC before consideration for adoption into its Fish and Wildlife Program. The *Supplement*, dated November 26, 2004, was then prepared.

The *Supplement* identifies the key factors limiting the biological potential of representative (“focal”) species, the biological objectives to address each limiting factor, and management strategies to achieve success for each objective. The *Yakima Subbasin Plan and Supplement* was adopted by NPPC into its Fish and Wildlife Program.

1.8 Relationship of Other Water Resource Activities to this Study

Several Federal and State agencies, the Yakama Nation, local entities, and public interest organizations are involved in water resource activities within the Yakima River basin. It is often informative to view these in the context of regional planning as represented by ongoing activities within the Columbia River Basin.

These activities are briefly discussed here because of the relevance to the Storage Study and this Draft PR/EIS. The presentation is not exhaustive, but rather attempts to highlight activities that have, or likely will, generate information relevant to this Draft PR/EIS.

1.8.1 Columbia River Basin Water Management Program

The Columbia River Basin Water Management Act was passed by the Washington Legislature in 2006. The Act directs Ecology to “. . . aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses” (Ecology, 2007a). The major components of the Columbia River Basin Water Management Program (CRBWMP) include storage, conservation, voluntary regional agreements, and other measures intended to meet the above legislative mandate. The CRBWMP also includes administrative functions such as development of a project inventory, a water supply and demand forecast, and a data management system. Funding and management of a number of major projects—including the Yakima River Basin Water Storage Feasibility Study—are components of the CRBWMP.

The CRBWMP directs Ecology to focus efforts to develop water supplies for the Columbia River Basin to meet the following needs:

- Alternatives to groundwater for agricultural users in the Odessa Subarea aquifer
- Sources of water supply for pending water rights applications
- A new uninterruptible supply of water for the holders of interruptible (junior) water rights on the Columbia River mainstem that are subject to instream flows or other mitigation conditions to protect streamflows

- New municipal, domestic, industrial, and irrigation water needs within the Columbia River Basin.

1.8.1.1 Columbia River Basin Water Management Program, Final Programmatic Environmental Impact Statement

The *Columbia River Basin Water Management Program, Final Programmatic Environmental Impact Statement* (CRBWMP EIS) (Ecology, 2007a) was developed by Ecology under SEPA as part of the Columbia River Basin Water Management Program development process. The CRBWMP EIS was prepared to assist in evaluating conceptual approaches to developing the CRBWMP and to describing the potential impacts that could be associated with components of the CRBWMP. Components evaluated included storage, conservation, voluntary regional agreements, instream resources, and policy alternatives for implementing requirements of the Columbia River Basin Water Management Act. The document also evaluated potential impacts associated with implementation of three actions: drawdowns of Lake Roosevelt, a supplemental feed route to supply Potholes Reservoir, and the proposed Columbia-Snake River Irrigators Association Voluntary Regional Agreement.

Components of the CRBWMP are briefly addressed below, with a more detailed treatment available in the EIS.

1.8.1.2 Storage

Potential storage projects that may be approved for study and funding include new large storage facilities (more than 1 million acre-feet), new small storage facilities (less than 1 million acre-feet), modification of existing storage facilities, and groundwater storage. Examples of potential storage projects include: Black Rock reservoir (new large facility), Wymer reservoir (new small facility), reoperation of Banks Lake (modification of existing facilities), and the City of Kennewick Groundwater Storage.

1.8.1.3 Conservation

Ecology has developed an inventory of more than 500 conservation projects and is currently developing, screening, and ranking criteria to determine which projects best meet the goals of the CRBWMP. Potential projects may address issues such as incentive payments to reduce water use and full or partial water banking, improvements to municipal water infrastructure, use of reclaimed water, improved water delivery efficiency at the irrigation district level and on-farm conservation, improved industrial infrastructure, and pump exchanges. Ecology would manage the use of conserved water.

1.8.1.4 Voluntary Regional Agreements

Under this component, groups would be able to enter voluntary regional agreements (VRA) with Ecology to exchange a package of water projects for new water rights. All existing legislation governing new water rights would remain in place, and VRAs must meet minimum requirements to be approved by Ecology. A request from the Columbia-Snake River Irrigators Association is an example of a VRA, and is evaluated in the CRBWMP EIS.

1.8.1.5 Instream Water

Ecology is pursuing a full range of options for augmenting instream resources. The Columbia River Basin Water Management Act provides that one-third of the active storage in any new storage facility made possible with the CRBWMP funding will be available for instream flows. Water for allocation to instream uses could be provided by a number of projects that Ecology is considering under the CRBWMP.

1.8.1.6 Inventory and Demand Forecasting

The Columbia River Basin Water Management Act directs Ecology to develop a water supply inventory and a long-term water supply and demand forecast that is updated every 5 years. The first inventory and long-term water supply and demand forecast was released in November 2006. The inventory and forecast include conservation and water storage projects, a water rights inventory, a water use inventory, a long-term water supply forecast, and a long-term demand forecast.

1.8.2 Priest Rapids Hydroelectric Project Relicensing

Grant County PUD owns and operates Priest Rapids and Wanapum Dams on the Columbia River as the Priest Rapids Project. The Priest Rapids Project has operated under a 50-year license that expired in October 2005, and has operated on an annual license since that date. The Federal Energy Regulatory Commission (FERC) recently completed a *Priest Rapids Hydroelectric Project, Final Environmental Impact Statement* (FERC, 2006) that outlines the requirements for relicensing. Requirements cover a range of resources, including aquatic resources such as resident and anadromous fish that inhabit Priest Rapids Lake or the Hanford reach, or pass through the dam. Many of the requirements deal with the timing and magnitude of flows designed to protect anadromous fish.

Priest Rapids Dam and Lake, located about 30 miles east of Yakima, would be the site of a water intake structure under the Black Rock Alternative evaluated in this Draft PR/EIS. The potential effects of water withdrawal from Priest Rapids Lake require close coordination with Grant County PUD, FERC, BPA, and other agencies.

1.8.3 Yakima Dams Fish Passage

Reclamation is leading a cooperative investigation with the Yakama Nation, State and Federal agencies, and others, to study the feasibility of providing fish passage at the five large storage dams of the Yakima Project. These dams—Bumping Lake, Kachess, Keechelus, Cle Elum, and Tieton—were never equipped with fish passage facilities. Four of the five reservoirs were originally natural lakes and historically supported Native American fisheries for sockeye salmon and other anadromous and resident fish (Reclamation, 2003a).

Implementation of passage features at the dams is an essential component of any potential plan to reintroduce sockeye salmon to the watershed. Passage at the dams would also likely benefit upper basin populations of steelhead, coho salmon, and Chinook salmon. Isolated populations of bull trout would potentially be reconnected by passage at the dams. Rainbow trout and other resident species would also be likely to benefit.

The scope of the fish passage planning study is currently limited to study of passage features at Cle Elum and Bumping Lake Dams. Successful implementation of fish passage at Cle Elum and Bumping Lake Dams could eventually lead to future detailed study of the other three dams (Kachess, Keechelus, and Tieton). The “Cle Elum and Bumping Lake Dams Fish Passage Facilities Planning Report” is scheduled for completion in 2008.

1.8.4 Additional Projects

In addition to the projects mentioned above, the following projects are reasonably certain to occur:

Tank Farm Closure and Waste Management Environmental Impact

Statement. The U.S. Department of Energy is preparing a new EIS to evaluate options for managing and disposing of waste, selecting supplemental treatments, closing tanks, and closing the Fast Flux Test Facility at the Hanford Site.

Bonneville Power Administration Fish and Wildlife Program Activities. BPA funds fisheries mitigation projects in the Columbia River Basin, including the Yakima River basin, to improve fish habitat. Projects in the Yakima River basin could act in concert with actions taken as part of the project to benefit anadromous fish.

Planned Growth in Yakima, Benton, and Kittitas Counties. Planned growth will continue in these counties. This growth currently involves expansion into underdeveloped areas potentially affecting fish and wildlife resources. Similar growth patterns will continue and could affect resources potentially affected by actions taken as part of this project. For example, the expanded growth could generate a need for additional water supplies.

1.9 How to Read This Document

This Draft PR/EIS is organized into six chapters. Chapter 1 has provided a general overview of issues beginning with the purpose and need for action, followed by study authorities, a brief discussion of public involvement, and ending with relevant background information on the study area, history of water management within the basin, and prior studies and activities dealing with water local management issues. Chapter 2 presents a description of the Joint Alternatives and compares the Joint Alternatives via the *P&Gs* (U.S. Water Resources Council, 1983), while chapter 3 describes the State Alternatives formulated and evaluated by Ecology. Chapter 2 basically provides the “planning report” technical data component of the Draft PR/EIS. Chapters 4 and 5 address the affected environment and environmental consequences to resources and provide the NEPA/SEPA technical analyses component of the Draft PR/EIS. Finally, chapter 6 describes consultation and coordination necessary for developing this Draft PR/EIS.